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Anoplura from Sea-Lions of the Pacific Ocean.

By G. F. FERRIS, Stanford University, California.

The Anopluran parasites of the seals and their allies constitute a small family, the *Echinophthiriidae*, containing less than ten species, all of which are adapted by a thick coating of spines, or spines and scales, to the aquatic life of their hosts. Opportunities for the examination of these marine mammals are not common and consequently new records are of much interest. The present paper records one Anopluran species previously described and another that appears to be new, both taken from sea-lions of the Pacific coast.

Echinophthirius fluctus n. sp.

Two mature males, a mature female and many immature

specimens taken from a stuffed skin of a sea-lion pup in the collection of the Department of Zoology of Stanford University. The skin bears no data, but the host is almost certainly the Stellar sea-lion, *Eumetopias jubata*, the range of which extends from California to Alaska.

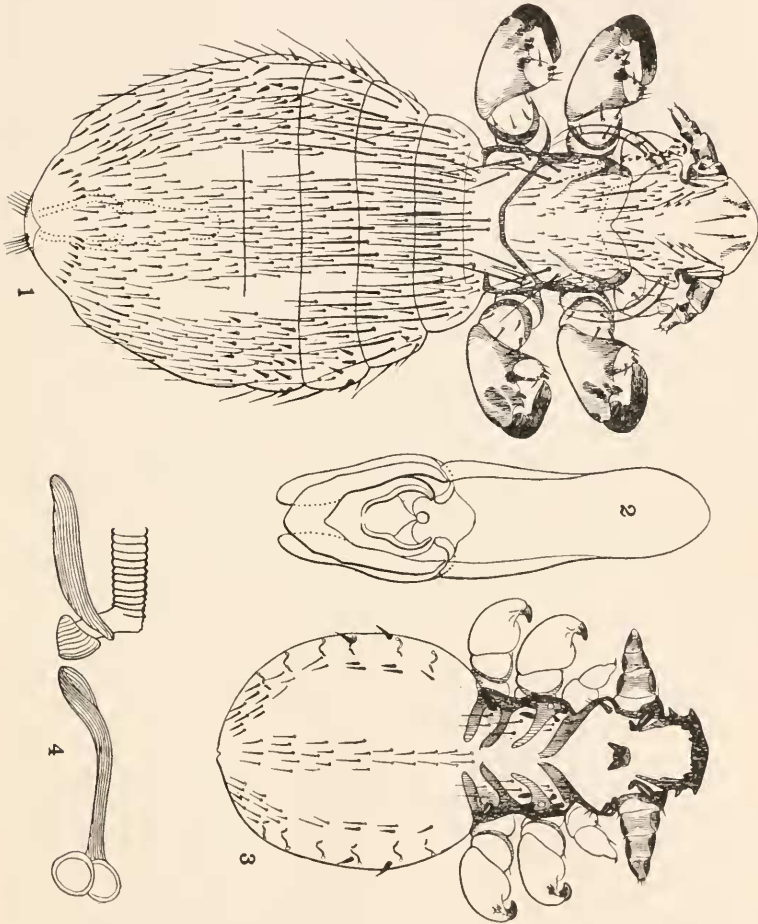


Fig. 1.—*Echinophthirius fluctus* n. sp. ; female.

Fig. 2.—*Echinophthirius fluctus* n. sp. ; genitalia of male.

Fig. 3.—*Echinophthirius fluctus* n. sp. ; 1st (?) stage of larva.

Fig. 4.—*Echinophthirius fluctus* n. sp. ; occluding apparatus of spiracle.

Through the kindness of Mr. James Waterston, of the Imperial Bureau of Entomology of Great Britain, it has been possible to compare the new species with specimens of *Echinophthirius horridus* (Olfers) (= *E. phocae* Lucas) taken from *Phoca vitulina*, a common seal of the Atlantic. The new species is very distinct, differing not only in its notably smaller size but in many structural characters as well. The extremely long spines on the temples, the slenderness of all the spines as contrasted with the short, blunt spines of *E. horridus* and the extremely small, sharp claws of the anterior legs serve to distinguish the new species immediately. It is in fact so different that it will probably eventually be placed in another genus.

Types, a mature male and a mature female, in the Stanford University collection. A paratype, a mature male, in the possession of Mr. James Waterston of the Imperial Bureau of Entomology of Great Britain.

♀. Length (cleared specimen), 2.4 mm. Body weakly chitinized throughout.

Head slightly more than half as wide as long, the anterior margin quite convex, the temples very prominent and sharp, the temporal margins converging rapidly to form the prolonged occiput. Antennae four-segmented, entirely destitute of spines except for very small spines at the distal end of each segment. The chaetotaxy of the head is entirely too complicated to describe in detail and only the more prominent details can be noted. Each temporal margin bears a pair of long stout spines which extend back to the middle of the thorax. The remaining spines are small and slender except for a transverse row, both dorsally and ventrally, near the posterior margin, which are much larger and stouter.

Thorax slightly longer than the head and but little wider, the lateral margins straight and nearly parallel. Along each lateral margin is a narrow chitinized area, which enlarges at the anterior lateral angles. From this enlargement a narrow bar extends diagonally a short distance toward the meson. A narrow, backwardly bent, transverse bar marks the dividing line between the meso- and metathorax. Mesothorax beset with numerous small, slender spines and with two or three conspicuously larger spines at each posterior lateral angle. Metathorax with a cluster of three or four small spines and two or three larger ones at each posterior lateral angle. Ventrally the thorax is beset with numerous small spines.

Anterior legs very small and with small, slender claw. Middle and posterior legs very large and stout, with large, heavy claw.

Abdomen elongated oval, widest near the middle, very weakly chitinized and thickly beset with slender spines, which are so arranged that a narrow, bare area is left on each side, about half way between the meson and the lateral margin. All the spines very slender and irregularly arranged except for a more or less regular, transverse row near the posterior margin of each of the first three segments which are conspicuously larger and stouter than the others. Chaetotaxy of the ventral side very similar. Gonopods practically obsolete, their positions marked by tufts of spines, and behind each gonopod is a thick cluster of spines.

♂. Length (cleared specimen), 2.2 mm. Very similar to the female, except for a noticeable reduction of the number of spines. Genitalia quite conspicuous, the basal plate short and rather broad, the parameres about half as long as the basal plate, rather weakly chitinized, slightly expanded posteriorly. There are no chitinous supporting structures as in *E. horridus*.

Immature stages. There are apparently three immature stages, differing from each other only in the increasing number of spines on the abdomen in each successive stage, but all differing very markedly from the mature form. In several instances the developing structures of one stage are visible within the body of the preceding stage and the sequence can thus readily be made out. Aside from the reduced number of spines all these stages differ from the adult in the extremely heavy chitinization of the skeletal elements of the head and thorax, the presence of numerous short, heavy, almost wart-like spines on head and thorax, the prolongation of the forehead and the small, weak claws. Figure 3, which is of the youngest stage found, obviates the necessity of an extended description.

Tracheal system. There are present seven pairs of spiracles, one pair on the mesothorax and six pairs on the abdomen. The segmentation of the abdomen is so faintly indicated that it is impossible to determine upon which segments the spiracles are borne (apparently they are on the third to eighth) and also, owing to the conditions under which the specimens were preserved it is difficult to speak with certainty of the distribution of the tracheal trunks. The occluding apparatus of the spiracles, however, presents some points of considerable interest.

All the spiracles, including the mesothoracic pair, are very small, so very small indeed that it is difficult to distinguish the openings. All are closed by the same type of apparatus. This consists of three chitinized pieces, a very small triangular piece that seems to border one side of the spiracle and that lies between the curved tips of two elon-

gated pieces. Apparently by some combination of muscles these long pieces can be brought to bear upon the small triangular piece, thus closing the spiracle. The arrangement of the parts is indicated in Fig. 4.

Antarctophthirius microchir (Troues. & Neum.).

A number of specimens, males, females and immature, from the California sea-lion, *Zalophus californianus*, obtained through the kindness of Mr. P. J. Fair, of the California Academy of Sciences. The species has previously been recorded from *Phocarctos hookeri*, another member of the Otaridiidae (Auckland Island). The description and beautiful figure given by Enderlein in the report of the Deutsche Südpolar Expedition (Vol. 10, pp. 511-512, ff. 176, 177, 183, 184) permit a definite determination of the species to be made. The California specimens differ hardly at all from those from the Antarctic.

Butterflies as Food for Squirrels. (Lep.).

The latter part of May, 1916, was noticeable in the vicinity of Los Angeles, California, for the great numbers of *Melitaea chalcon*. On the 27th I was resting by the roadside among the willows at the upper end of Griffith Park. Great numbers of *chalcon* were flitting up and down the road and settling on certain moist, sandy spots. Suddenly a gray ground squirrel ran out on one of these spots and apparently caught a butterfly, then sat up on its hind legs and worked over it. I tried several times to get closer, but succeeded only in scaring away the squirrel. Each time, however, it returned and went through the same performance. Finally I walked up and examined the spot, where to my astonishment I found quantities of *chalcon* wings. To satisfy myself I counted roughly up to a hundred wings or enough for twenty-five complete butterflies. The squirrel evidently took the opportunity to obtain a meal while the butterflies were easily caught and gathered plentifully on the moist ground.—J. R. HASKIN.

Vincetoxicum japonicum as a Mosquito Catcher (Dip.).

While it is generally known that some species of female mosquitoes feed to a certain extent upon the nectar of flowers, very little has been said of the herbaceous perennial, *Vincetoxicum japonicum* and its mosquito-catching ability. It is known commonly as the mosquito plant and its small white flowers which appear in June, secrete and trap by means of a sticky nectar, various small flower-visiting flies and mosquitoes. During the past season, I have found females of *Culex pipiens* and *Aedes subcantans* firmly held fast by the flowers. It would appear from this that females of these two species occasionally feed on nectar. In addition to flies and mosquitoes different species of *Geometridae* were noted, swinging helplessly, each with the tip of its proboscis fastened in the flower. Bees have no trouble in securing the nectar and getting safely away with it as they are evidently too able-bodied to be held fast.—HARRY B. WEISS, New Brunswick, New Jersey.